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EXAMINER	
DUONG, THOMAS	

ART UNIT	PAPER NUMBER
2145	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/022,081	LIOU ET AL.
	Examiner	Art Unit
	Thomas Duong	2145

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 15 March 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to the applicants Amendment filed on March 15, 2007. Applicant amended *claim 1*. *Claims 1-21* are presented for further consideration and examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. *Claims 6, 8-15, and 17-21* are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalavade (US006901067B1), in view of Taniguchi et al. (US006445679B1), and further in view of Howe (US006611519B1).

4. With regard to *claims 6, 14, and 21*, Kalavade discloses,

- *a session controller for synchronizing with client devices, receiving messages, and outputting encoder control commands based on the messages; and*

  (Kalavade, col.1, line 7 – col.13, line 67)

  Kalavade discloses, *"the session control module 624 performs the session control function 320, which in the instant embodiment of the invention*

encompasses the illustrative tasks of maintaining an Internet 160 interface, establishing and controlling Internet sessions with the content provider server 140, implementing the ASGP for converting the client cell phone into a virtual personalized player by translating playback control requests from the client into session control commands routed to the content provider server 140" (Kalavade, col.8, lines 5-13). Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

- *<u>a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to a playback of the video stream,</u> outputting the messages based on the user control commands, and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices, including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, based upon at least a prediction of available bandwidth for the corresponding one of the client devices, any pending encoder control commands, a priority of each of the plurality of frames, and a shared timeline between the client devices, <u>whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices.</u>* (Kalavade, col.1, line 7 – col.13, line 67)

Kalavade discloses, *"the service control module 622 performs the service control function 310, which in the instant embodiment of the invention encompasses the*

illustrative tasks of presenting various service control options to the client cell phone 130, processing requests for service, and processing playback commands" (Kalavade, col.7, lines 61-66). In addition, Kalavade discloses, *"upon receipt of a playback control requirement from call channel k service control module 622_k ((840)—from match-point B of FIG. 7), the session control module 624_k converts the playback control requirements utilized by the service control module 622_k into a format appropriate for the packet streaming content server. The conversion is accomplished utilizing the audio session gateway protocol (ASGP) developed in conjunction with the instant invention (845). In one exemplary embodiment of the present invention, the ASGP converts user selected DTMF digits into command formats appropriate for the content provider server 140 format utilized (i.e.—a command to pause audio playback, although common at the user interface, requires different conversions by the ASGP for different audio content players"* (Kalavade, col.10, line 59 – col.11, line 7). Hence, Kalavade teaches of the service control module 622 (i.e., Applicants' encoder) receiving the playback command from the client via the cell phone (i.e., Applicants' client device). Kalavade discloses, *"individual call channels 620 are assigned to each call and are comprised of a service control module 622, session control module 624, media translation module 626, and line driver 628"* (Kalavade, col.7, lines 57-60). Hence, Kalavade teaches of plurality of service control modules (i.e., Applicants' encoders), each of which corresponds to a different call channel from a particular client cell phone (i.e., Applicants' client devices).

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to a playback of the video stream, <u>outputting the messages based on the user control commands,</u> and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices, including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, based upon at least a prediction of available bandwidth for the corresponding one of the client devices, any pending encoder control commands, a priority of each of the plurality of frames, and a shared timeline between the client devices, <u>whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices.</u>* (Kalavade, col.1, line 7 – col.13, line 67)

  Kalavade discloses, *"the session control module 624 performs the session control function 320, which in the instant embodiment of the invention encompasses the illustrative tasks of maintaining an Internet 160 interface, establishing and controlling Internet sessions with the content provider server 140, implementing the ASGP for converting the client cell phone into a virtual personalized player by translating playback control requests from the client into session control commands routed to the content provider server 140"* (Kalavade, col.8, lines 5-13). Hence, Kalavade teaches of translating the playback control requests from the client into session commands for the content provider server.

However, Kalavade does not explicitly disclose,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to a playback of the video stream, outputting the messages based on the user control commands, <u>and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices, including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, based upon at least a prediction of available bandwidth for the corresponding one of the client devices, any pending encoder control commands, a priority of each of the plurality of frames, and a shared timeline between the client devices,</u> whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices.*

Taniguchi teaches,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to a playback of the video stream, outputting the messages based on the user control commands, <u>and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices, including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, based upon at least a prediction of available bandwidth for the corresponding one of the client devices, any pending encoder control commands, a priority of each of the plurality of</u>*

frames, and a shared timeline between the client devices, whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices. (Taniguchi, col.1, line 5 – col.38, line 13)

Taniguchi discloses, *"in this method, a packet with a lower priority (lower degree of importance) in a stream is positively annulled (discarded), and thereby a quality and a transmission rate are both adjusted, whereby an available transmission rate (transfer band) can be made to be as close to a transmission rate specified by a user as possible, while maintaining a quality at a highest level attainable"* (Taniguchi, col.2, lines 20-26). In addition, Taniguchi discloses, *"as a result, even if there are load variations in a network or a system, dynamic adjustment of a transmission rate can be performed while maintaining not only real time mode of operation but a quality at a highest level attainable"* (Taniguchi, col.2, line 66 – col.3, line 2). Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream. Also, Taniguchi discloses, *"the present invention has a constitution that the feed back control means for setting a minimum transmission rate and a maximum transmission rate which shows a control range for a transmission rate according to specification from outside, … while when less than the minimum transmission rate, a stream transfer is stopped or an*

actual transmission rate is changed to a parameter showing the minimum transmission rate and a stream transfer is continued" (Taniguchi, col.4, lines 40-52). In addition, Taniguchi discloses, *"in such a constitution, one node in a system can centrally perform load judgment (QoS judgment) of all the stream transfer system in the system and feed back control (QoS control) based on the judgment results"* (Taniguchi, col.5, lines 13-16). Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia streams of all the stream transfers in the system in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible by positively annulling packets of lower priority.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Taniguchi with the teachings of Kalavade to *"provide a stream communications system and a stream transfer control method in which dynamic adjustment of a transmission rate is enabled while not only is real time mode of operation is maintained, but a quality is also maintained at a highest level attainable, even when load variations arise"* (Taniguchi, col.1, line 66 – col.2, line 4). According to Taniguchi, *"it is difficult to maintain a transmission rate which a user specifies in a situation where a load state of a network or a system varies"* (Taniguchi, col.2, lines 31-33) prior to the present invention.

However, Kalavade and Taniguchi do not explicitly disclose,

- <u>*a session controller for synchronizing with client devices,*</u> *receiving messages, and outputting encoder control commands based on the messages; and*
- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands*

from the corresponding one of the client devices that correspond to a playback of the video stream, outputting the messages based on the user control commands, and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices, including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, <u>based upon at least a</u> prediction of available bandwidth for the corresponding one of the client devices, any pending encoder control commands, a priority of each of the plurality of frames, <u>and a shared timeline between the client devices,</u> whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices.

Howe teaches,

- *<u>a session controller for synchronizing with client devices,</u> receiving messages, and outputting encoder control commands based on the messages; and* (Howe, col.1, line 10 – col.39, line 62)
- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to a playback of the video stream, outputting the messages based on the user control commands, <u>and dynamically and respectively controlling a transmission of the video stream to the corresponding one of the client devices,</u> including respectively transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of service for all of the client devices, <u>based upon at least a</u> prediction of available bandwidth for the corresponding one of the client devices,*

any pending encoder control commands, a priority of each of the plurality of frames, <u>and a shared timeline between the client devices,</u> whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices. (Howe, col.1, line 10 – col.39, line 62)

Howe discloses, *"these device embodiments, methods, and network architecture utilize means for a master clock, means for synchronization of clocks in distributed network elements; means for switching within each network element in a non-blocking, non-delaying manner at a layer one level; means for scheduling and executing high-priority, real-time, or other layer one calls or sessions in each network element; means for controlling said synchronization means, said switching means, and said scheduling and execution means in each network element"* (Howe, col.4, lines 12-21). Hence, Howe teaches of utilizing a master clock to synchronize the sessions of the distributed network elements in the system in order to provide an efficient real-time application such as video and audio streaming.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Howe with the teachings of Kalavade and Taniguchi to *"guarantee delivery of selected packets, such as real-time and high-priority packets, like Internet phone, audio and video streaming, video conferencing, and urgent messages"* (Howe, col.3, lines 57-60), to "*assure that selected packets with higher priority will be delivered more rapidly through the network than lower priority packets"* (Howe, col.3, lines 65-67) and to *"do the above tasks with a high degree of network efficiency"* (Howe, col.4, lines 4-5).

5. With regard to <u>*claim 8*</u>, Kalavade, Taniguchi, and Howe disclose,

- *wherein each of said plurality of encoders transmits a client device command to the corresponding one of the client devices based on the encoder control commands, the client device command respectively corresponding to the playback of the video stream on the corresponding one of the client devices.* (Kalavade, col.1, line 7 – col.13, line 67)

  Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

6. With regard to <u>*claims 9 and 17*</u>, Kalavade, Taniguchi, and Howe disclose,

- *wherein each of said plurality of encoders dynamically optimizes the transmission of the video stream to the corresponding one of the client devices based on at least the prediction of available bandwidth for the corresponding one of the client devices and the priority of each of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream.

7. With regard to <u>*claims 10 and 18*</u>, Kalavade, Taniguchi, and Howe disclose,

wherein each of said plurality of encoders dynamically optimizes the transmission of the video stream to the corresponding one of the client devices based on at least parameters of a respective connection of the corresponding one of the client devices to said system. (Kalavade, col.1, line 7 – col.13, line 67)

Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

8. With regard to <u>*claims 11 and 15*</u>, Kalavade, Taniguchi, and Howe disclose,

wherein said session controller generates each of said plurality of encoders upon respectively receiving a connect request from each of the client devices. (Kalavade, col.1, line 7 – col.13, line 67)

Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

9. With regard to <u>*claims 12 and 19*</u>, Kalavade, Taniguchi, and Howe disclose,

- *wherein each of said plurality of encoders dynamically controls the transmission of the video stream further based on a requirement that at least a pre-designated minimum number of frames must be received by all of the client devices, the pre-designated minimum number of frames being comprised in the plurality of frames and corresponding to a basic content of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in

order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream.

10. With regard to <u>*claims 13 and 20*</u>, Kalavade, Taniguchi, and Howe disclose,

- *wherein each of said plurality of encoders dynamically controls the transmission of the video stream further based on a requirement that at least a pre-designated subset of the plurality of frames must be received by all of the client devices, the pre-designated subset of the plurality of frames corresponding to a basic content of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream.

11. <u>*Claims 7 and 16*</u> are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalavade (US006901067B1), in view of Taniguchi et al. (US006445679B1), further in view of Howe (US006611519B1), and further in view of del Val et al. (US006763392B1).

12. With regard to *claims 7 and 16*, Kalavade, Taniguchi, and Howe disclose,

See rejection of *claims 6 and 14* as detailed above.

However, Kalavade, Taniguchi, and Howe do not explicitly disclose,

- *wherein the user control commands correspond to virtual VCR control commands.*

del Val teaches,

- *wherein the user control commands correspond to virtual VCR control commands.* (del Val, col.1, line 6 – col.9, line 52)

  del Val discloses, *"the third protocol of interest with respect to arrangement 100 is a Real-Time Streaming Protocol (RTSP), which is an application layer control protocol that initiates and directs delivery of streaming media from server device 102 to client device 104. RTSP has been likened to a 'network VCR remote control protocol' since it provides the client device application /user with the ability to play, pause, rewind, fast forward, etc. (as applicable to the type of media being streamed)"* (del Val, col.4, lines 45-54). Hence, del Val teaches of the ability for the client device/user to perform commands that are similar to those available on a VCR through the use of the streaming protocol RTSP.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of del Val with the teachings of Kalavade, Taniguchi, and Howe to provide improved methods and arrangements that *"integrate media streaming and Quality of Service (QoS) supportive protocols, such as, e.g., Real-Time Streaming Protocol (RTSP) and Resource Reservation Protocol (RSVP), respectively, in a manner that significantly reduces the startup latency and improves the overall viewing experience by an end user"* (del Val, col.1, lines 55-61).

13. *Claims 1-5* are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalavade (US006901067B1), in view of Taniguchi et al. (US006445679B1), in view of Teng et al. (US005930473), and further in view of Howe (US006611519B1).

14. With regard to *claim 1*, Kalavade discloses,

- *a session controller for synchronizing collaborative playback of the video stream between a plurality of client devices, receiving messages, and outputting encoder control commands based on the messages; and* (Kalavade, col.1, line 7 – col.13, line 67)

  Kalavade discloses, *"the session control module 624 performs the session control function 320, which in the instant embodiment of the invention encompasses the illustrative tasks of maintaining an Internet 160 interface, establishing and controlling Internet sessions with the content provider server 140, implementing the ASGP for converting the client cell phone into a virtual personalized player by translating playback control requests from the client into session control commands routed to the content provider server 140"* (Kalavade, col.8, lines 5-13). Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to the collaborative playback of the video stream, outputting the messages based on*

<u>the user control commands,</u> and respectively controlling a transmission of the video stream to the corresponding one of the client devices using a timeline shared between the client devices, including respectively and dynamically transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of services for all of the client devices. (Kalavade, col.1, line 7 – col.13, line 67)

Kalavade discloses, *"the service control module 622 performs the service control function 310, which in the instant embodiment of the invention encompasses the illustrative tasks of presenting various service control options to the client cell phone 130, processing requests for service, and processing playback commands"* (Kalavade, col.7, lines 61-66). In addition, Kalavade discloses, *"upon receipt of a playback control requirement from call channel k service control module 622_k ((840)—from match-point B of FIG. 7), the session control module 624_k converts the playback control requirements utilized by the service control module 622_k into a format appropriate for the packet streaming content server. The conversion is accomplished utilizing the audio session gateway protocol (ASGP) developed in conjunction with the instant invention (845). In one exemplary embodiment of the present invention, the ASGP converts user selected DTMF digits into command formats appropriate for the content provider server 140 format utilized (i.e.—a command to pause audio playback, although common at the user interface, requires different conversions by the ASGP for different audio content players"* (Kalavade, col.10, line 59 – col.11, line 7). Hence, Kalavade teaches of the service control module 622 (i.e., Applicants' encoder) receiving the playback command from the client via the cell phone (i.e.,

Applicants' client device). Kalavade discloses, *"individual call channels 620 are assigned to each call and are comprised of a service control module 622, session control module 624, media translation module 626, and line driver 628"* (Kalavade, col.7, lines 57-60). Hence, Kalavade teaches of plurality of service control modules (i.e., Applicants' encoders), each of which corresponds to a different call channel from a particular client cell phone (i.e., Applicants' client devices).

Kalavade discloses, *"the session control module 624 performs the session control function 320, which in the instant embodiment of the invention encompasses the illustrative tasks of maintaining an Internet 160 interface, establishing and controlling Internet sessions with the content provider server 140, implementing the ASGP for converting the client cell phone into a virtual personalized player by translating playback control requests from the client into session control commands routed to the content provider server 140"* (Kalavade, col.8, lines 5-13). Hence, Kalavade teaches of translating the playback control requests from the client into session commands for the content provider server.

However, Kalavade does not explicitly disclose,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to the collaborative playback of the video stream, outputting the messages based on the user control commands, and respectively controlling a transmission of the video stream to the corresponding one of the client devices using a timeline shared between the client devices, <u>including respectively and dynamically</u>*

transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of services for all of the client devices.

Taniguchi teaches,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to the collaborative playback of the video stream, outputting the messages based on the user control commands, and respectively controlling a transmission of the video stream to the corresponding one of the client devices using a timeline shared between the client devices, including respectively and dynamically transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of services for all of the client devices.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Taniguchi discloses, *"in this method, a packet with a lower priority (lower degree of importance) in a stream is positively annulled (discarded), and thereby a quality and a transmission rate are both adjusted, whereby an available transmission rate (transfer band) can be made to be as close to a transmission rate specified by a user as possible, while maintaining a quality at a highest level attainable"* (Taniguchi, col.2, lines 20-26). In addition, Taniguchi discloses, *"as a result, even if there are load variations in a network or a system, dynamic adjustment of a transmission rate can be performed while maintaining not only real time mode of operation but a quality at a highest level attainable"* (Taniguchi, col.2, line 66 – col.3, line 2). Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding)

packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream. Also, Taniguchi discloses, *"the present invention has a constitution that the feed back control means for setting a minimum transmission rate and a maximum transmission rate which shows a control range for a transmission rate according to specification from outside, ... while when less than the minimum transmission rate, a stream transfer is stopped or an actual transmission rate is changed to a parameter showing the minimum transmission rate and a stream transfer is continued"* (Taniguchi, col.4, lines 40-52). In addition, Taniguchi discloses, *"in such a constitution, one node in a system can centrally perform load judgment (QoS judgment) of all the stream transfer system in the system and feed back control (QoS control) based on the judgment results"* (Taniguchi, col.5, lines 13-16). Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia streams of all the stream transfers in the system in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible by positively annulling packets of lower priority.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Taniguchi with the teachings of Kalavade to *"provide a stream communications system and a stream transfer control method in which dynamic adjustment of a transmission rate is enabled while not only is real time mode of operation is maintained, but a quality is also maintained at a*

highest level attainable, even when load variations arise" (Taniguchi, col.1, line 66 – col.2, line 4). According to Taniguchi, *"it is difficult to maintain a transmission rate which a user specifies in a situation where a load state of a network or a system varies"* (Taniguchi, col.2, lines 31-33) prior to the present invention.

However, Kalavade and Taniguchi do not explicitly disclose,

- *<u>synchronizing collaborative playback of the video stream between a plurality of client devices,</u> receiving messages, and outputting encoder control commands based on the messages; and*

Teng teaches,

- *<u>synchronizing collaborative playback of the video stream between a plurality of client devices,</u> receiving messages, and outputting encoder control commands based on the messages; and* (Teng, col.1, line 5 – col.16, line 65)

  Teng discloses, *"the server 205 controls the transmission of the video and audio streams over network 220 using, for example, the RPC features described above in conjunction with FIG. 3. Communication between server 205 and the presenter client 210 is provided by establishing an RPC channel 225. Similarly, communication between server 205 and viewer clients 215-i is provided by establishing RPC channels 230-i. The server 205 is configured such that a given client can receive an RPC from the server without the server first receiving an initiating RPC from the given client. In this embodiment, a live video stream from presenter client 210 is continuously provided to each of the viewer clients 215-i. The presenter video stream represents, for example, live video depicting a particular conference participant, a conference room, a classroom, a blackboard and an instructor, a series of viewgraphs or any other presentation suitable for*

display at a user terminal of one or more of the viewer clients 215-i" (Teng, col.11, line 64 – col.12, line 14). Hence, Teng teaches of the server 205 (i.e., Applicants' session controller) controlling the transmission of video and audio stream (i.e., Applicants' collaborative playback of the video stream) over the network to the viewer clients (i.e., Applicants' client devices) in response to a RPC command sent by the presenter client.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Teng with the teachings of Kalavade and Taniguchi to *"provide a video server suitable for supporting a wide variety of live full motion video applications as well as integrating live video distribution with other functions including video recording and playback"* (Teng, col.3, lines 42-45). In addition, according to Teng, *"finally, the ultimate goal is computer-supported collaboration, whereby users at different locations will be able to share stored and live video data and work on problems simultaneously using multimedia workstations linked by local and wide-area networks. Users of such desktop conferencing systems will be able to access stored video and audio from a central server, hold live audio/video conferences with remotely based colleagues via the PCs on their desks and work simultaneously with them on files in a shared electronic workspace"* (Teng, col.2, lines 4-13).

However, Kalavade, Taniguchi, and Teng do not explicitly disclose,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to the collaborative playback of the video stream, outputting the messages based on*

the user control commands, <u>and respectively controlling a transmission of the video stream to the corresponding one of the client devices using a timeline shared between the client devices,</u> including respectively and dynamically transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of services for all of the client devices.

Howe teaches,

- *a plurality of encoders, each of the plurality of encoders being dedicated to a corresponding one of the client devices for receiving user control commands from the corresponding one of the client devices that correspond to the collaborative playback of the video stream, outputting the messages based on the user control commands, <u>and respectively controlling a transmission of the video stream to the corresponding one of the client devices using a timeline shared between the client devices,</u> including respectively and dynamically transmitting or discarding each of the plurality of frames so as to cooperatively maintain a minimum quality of services for all of the client devices.* (Howe, col.1, line 10 – col.39, line 62)

  Howe discloses, *"these device embodiments, methods, and network architecture utilize means for a master clock, means for synchronization of clocks in distributed network elements; means for switching within each network element in a non-blocking, non-delaying manner at a layer one level; means for scheduling and executing high-priority, real-time, or other layer one calls or sessions in each network element; means for controlling said synchronization means, said switching means, and said scheduling and execution means in each network element"* (Howe, col.4, lines 12-21). Hence, Howe teaches of utilizing a

master clock to synchronize the sessions of the distributed network elements in the system in order to provide an efficient real-time application such as video and audio streaming.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Howe with the teachings of Kalavade, Taniguchi, and Teng to *"guarantee delivery of selected packets, such as real-time and high-priority packets, like Internet phone, audio and video streaming, video conferencing, and urgent messages"* (Howe, col.3, lines 57-60), to "*assure that selected packets with higher priority will be delivered more rapidly through the network than lower priority packets"* (Howe, col.3, lines 65-67) and to *"do the above tasks with a high degree of network efficiency"* (Howe, col.4, lines 4-5).

15. With regard to <u>*claim 4*</u>, Kalavade, Taniguchi, Teng, and Howe disclose,

- *wherein each of said plurality of encoders dynamically optimizes the transmission of the video stream to the corresponding one of the client devices based on at least the prediction of available bandwidth for the corresponding one of the client devices and the priority of each of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available

bandwidth in dynamically controlling the transmission rate of the multimedia stream.

16. With regard to <u>*claim 5*</u>, Kalavade, Taniguchi, Teng, and Howe disclose,

wherein each of said plurality of encoders dynamically optimizes the transmission of the video stream to the corresponding one of the client devices based on at least parameters of a respective connection of the corresponding one of the client devices to said system. (Kalavade, col.1, line 7 – col.13, line 67)

Hence, Kalavade teaches of receiving and translating the playback control requests from the client into session commands for the content provider server.

17. With regard to <u>*claim 2*</u>, Kalavade, Taniguchi, Teng, and Howe disclose,

- *wherein each of said plurality of encoders dynamically controls the transmission of the video stream further based on a requirement that at least a pre-designated minimum number of frames must be received by all of the client devices, the pre-designated minimum number of frames being comprised in the plurality of frames and corresponding to a basic content of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available

bandwidth in dynamically controlling the transmission rate of the multimedia stream.

18. With regard to <u>*claim 3*</u>, Kalavade, Taniguchi, Teng, and Howe disclose,

- *wherein each of said plurality of encoders dynamically controls the transmission of the video stream further based on a requirement that at least a pre-designated subset of the plurality of frames must be received by all of the client devices, the pre-designated subset of the plurality of frames corresponding to a basic content of the plurality of frames.* (Taniguchi, col.1, line 5 – col.38, line 13)

  Hence, Taniguchi teaches of dynamically controlling the transmission of the multimedia stream by positively annulling (discarding) packets of lower priority in order to maintain a transmission rate as close to that specified by the user as possible while still maintaining the highest quality possible. Therefore, Taniguchi teaches of taking into account the priority of the packets and the available bandwidth in dynamically controlling the transmission rate of the multimedia stream.

Response to Arguments

19. Applicant's arguments with respect to *claims 6 and 14* have been considered but they are not persuasive.

20. With regard to <u>*claims 6 and 14*</u>, the Applicants point out that:

- <u>*Kalavade does not teach,*</u> *"a session controller for synchronizing collaborative playback of the video stream between a plurality of client devices, receiving*

> *messages, and outputting encoder control commands based on the messages" as claimed in Claim 1 or "whereby the user control command allows a user of one of the client devices to control the playback of the video stream on all of the client devices" as claimed in Claims 6 and 14. Kalavade teaches a single connection between a cellular telephone and a server of Interact audio content. Kalavade's cellular telephone controls only its own connection. A single connection such as that of Kalavade's cellular telephone does not include facilities for a user control command allowing "a user of one of the client devices to control the playback of the video stream on all of the client devices" essentially as claimed in Claims 6 and 14 nor "a session controller for synchronizing collaborative playback of the video stream between a plurality of client devices, receiving messages, and outputting encoder control commands based on the messages" as claimed in Claim 1. A client controlling only its own connection is not collaborative.*

However, the Examiner finds that the Applicants' arguments are not persuasive because Kalavade discloses, *"in the case of live content, the MGA 120 is designed to support the multi-casting of a single PCM audio signal stream to a plurality of users, that is to one or more client cell phones 130, without requiring the replication of resources on a per call channel 620 basis for each call connection to each client cell phone 130. I call this mode of multi-casting "cell casting." Cell Casting reduces the bandwidth and processing overhead when a plurality of clients want to listen to the same content. In accordance with the instant illustrative embodiment of the invention, cell casting is supported by the MGA 120 in the following manner. The cell casting control module 650 establishes content sessions with one or more Internet*

broadcast channels over the packet interface 430. The cell casting control module 650 maintains a list of each of the sessions established and the cell cast channels 640 through which corresponding session data is processed, the content provider server address 140, and the group of client users currently subscribing to each of the cell cast channels 640. Each cell cast channel 640 is comprised of a cell cast session control module 642 and a cell cast media translation module 644, with functionality replicating the functionality of individual call channel's similarly-named session control modules 624 and media translation module 626" (Kavalade, col.8, lines 31-54). Hence, Kavalade teaches of an embodiment called *"cell casting"* which is a *"multi-casting of a single PCM audio signal stream to a plurality of users, that is to one or more client cell phones 130"* (Kavalade, col.8, lines 32-34). In addition, Kavalade teaches that *"each cell cast channel 640 is comprised of a cell cast session control module 642"* (Kavalade, col.8, lines 4-50) for controlling the group of client users currently subscribing to the corresponding cell cast channel. Hence, Kavalade teaches that each control command issued will affect any clients subscribing to the particular cell cast channel, because each cell cast channel comprises of just one cell cast control module.

21. Applicant's arguments with respect to *claim 1* have been considered but are moot in view of the new ground(s) of rejection

Conclusion

22. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas Duong whose telephone number is 571/272-3911. The examiner can normally be reached on M-F 7:30AM - 4:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason D. Cardone can be reached on 571/272-3933. The fax phone numbers for the organization where this application or proceeding is assigned are 571/273-8300 for regular communications and 571/273-8300 for After Final communications.

Thomas Duong (AU2145)

May 22, 2007

Jason D. Cardone

Supervisory PE (AU2145)